

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
SOUTHERN REGION
SUBTROPICAL TEXAS AREA
P. O. Box 267
Weslaco, TX 78596

RECEIVED JAN 29 1980

January 28, 1980

Subject: WRU Reports for Calendar Year 1979, and
Plans for Fiscal Year 1981

To: Research Leaders, STA

Enclosed are guidelines for subject documents. Draft copies are to be in the Area Office on or before March 1, 1980. We will start processing them as soon as they are received.

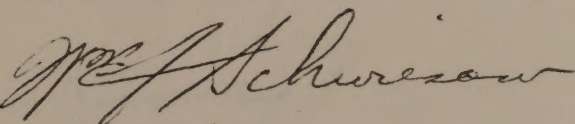
A copy of Dr. Kinney's letter dated January 17, 1980, on the subject "Annual Research Reports and Plans" calling for the subject documents is enclosed. We have revised the General Guidelines, Instructions and Formats issued last year to conform with the procedures contained in Dr. Kinney's letter. These revised General Guidelines, Instructions and Formats are enclosed. We are also asking that suggestions on slides and "feelies" for Budget Presentations be included in section IIc of the Annual Research Report. Please refer to the enclosed copy of letter from Mr. Edminster dated December 17, 1979, for the type of information requested.

The Preprinted Form AD-421's are being sent to PPR from Headquarters and will be forwarded to you as soon as we receive them. Please note that you can make changes directly on the 421's to correct any erroneous entries. The preprinted AD Form 421 may not be used for making Final Reports.

The Program Mission Statements in Items II and VIIIB of the Plan are identical, i.e., the same statement is used in both items.

Signatures are required only in Item V of the Plan. No signatures are required in Item VIIIB of the Plan.

If planned CRIS actions are indicated in Item VI of the Plan, be sure to initiate such actions in a timely manner. The CRIS listed in Item VI will be identical to those you will list on the "Mark Up" of the computer listing you receive each year from Budget and Fiscal Branch of % of resources in a WRU to the CRIS in that WRU.



W. F. Schwiesow
Asst. to Area Director

Enclosures

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

OFFICE OF THE DEPUTY DIRECTOR FOR
AGRICULTURAL RESEARCH
WASHINGTON, D.C. 20250

January 17, 1980

SUBJECT: Annual Research Reports and Plans

TO: Regional Administrator's

Your comments on our latest effort to improve the timing of report submission are appreciated.

Dr. Cox's plea to prepare reports on the same set of instructions as last year reflects a unanimous opinion. The only change we suggested was to combine the reports and send them in together by March 1, a modification agreed to by the Chiefs and the PPR's.

The recent responses to my memo of December 13 from Drs. Cox, Olson and Niffenegger were reviewed by the Chiefs and me. As a result of our discussions, I ask you to do the following:

1. Maintain all features of last year's procedures except for the following modifications.
2. Due date March 1:
Annual Research Report (covering last calendar year - 1979)
Annual Research Plan (covering next fiscal year - 1981)
PRMP, Form 560, in draft with best estimate at time of preparation.
3. Assemble plans so that CRIS Work Unit relationships are shown separately for each NRP and have the plan of work for each NRP begin on a new page.
4. Send complete report to appropriate NRP coordinator for each NRP included in report.

It is recognized that item 2 above is not going to be completely satisfactory to everybody, but it reflects what I consider a reasonable compromise with minimum change. Following this system will give NPS the latest available information on plans and resources early enough for their review and comments to be timely and useful. Your patience and cooperation in working these problems out are greatly appreciated.

T. B. Kinney, Jr.
T. B. KINNEY, JR.
Acting Deputy Director

cc:

Dr. Levin Dr. Naegle
Dr. Purchase Mr. Rhodes
Dr. Coleman Mr. Edminster
Dr. Brooks Dr. Barrows
Dr. Cowan

-21
8/2/80

CY 1979

ANNUAL RESEARCH PROGRESS REPORT ~~(FY 1978)~~

General Guidelines

This report is the primary research program report of progress in AR. These reports document research accomplishments for both the scientists' personal record and for the Agency. They are used by both line managers and staff scientists in making decisions and preparing consolidated program and Agency reports. Specific reporting items are listed below.

Calendar Year 1979.

Reporting Period - The reporting period for this progress report is [^] Fiscal Year 1978. ~~Although the fiscal year is not perfectly matched to a crop year, it is fairly close and will match better with the plans that are made on a fiscal year basis. Also, it is recognized that some of the analysis and maybe even the research will be completed during the months immediately following the fiscal year.~~ In any case include all progress since your last report.

Reporting Unit - The reporting unit for this report is an NRP at a location. Although this is a different unit than that used for planning, it is more convenient and appropriate for progress reporting. (X)

Research Progress - Both the narrative and achievement portions of the progress report are the same as in the past.

Also, the examples of progress for the Explanatory Notes section of the Agency's budget will be submitted by scientists as part of this report the same as in the past.

The CRIS Progress Report should be attached.

Program Reviews - Report those reviews taken place during the reporting period and their impact. Although this is a new requirement some of the regions have asked for it in the past.

Due Date - ~~April 1, 1979 with copies submitted to: Area/Center Director, Regional PPR, NRP Coordinator, and Project Coordination Office.~~

These Reports attached to the associated Plans are submitted following the routing for the Plans so that they can be delivered to Headquarters by March 1, or as soon thereafter as possible. Draft copies of both the Report and the Plan are to be sent by RL directly to the NPS coordinator or coordinators. These copies for NPS should be plainly marked "DRAFT".

(See attached Instructions and Format)

- (X) Assemble the annual research report for all NRP's in the management/organizational unit used in the associated annual research plan and attach to the plan, e.g., if the management/organizational unit for which a plan is submitted has 3 NRP's, an annual Research report will be written for each, assembled together and submitted together with the associated Annual Research Plan.

CY 1979
ANNUAL RESEARCH PROGRESS REPORT (FY=1978)
(Prepare separate report for each NRP)

I. Research Unit: Show title and address of this Unit (use MODE title)

Research Unit: *Insect Pathology and Rearing Unit*

USDA, SEA-AR
Western Cotton Research Lab
4135 E. Broadway Road
Phoenix, AZ 85040

II. Research Progress:

A. State the NRP Technological Objective(s) to which this research is directed. Immediately below each applicable TO listed provide the following:

1. Progress Report (narrative):

List by CRIS Work Unit number and in sequence the specific objectives from the appropriate year annual plans followed immediately by a statement covering the progress made towards those objectives since the last annual report. If possible stay within one-half page per SY. If this is insufficient space, provide a one-page summary per TO of significant findings, and include full statements as attachments; if no objective was listed for a specific accomplishment or progress item, so indicate. Also if no progress was made on a specific objective please explain or indicate "no progress". (Refer to objectives listed for 1978 in prior Annual WRU Reports and Plans).

2. Progress Reports (achievements):

On a separate page provide listings of: (a) tangible achievements such as publications, patents, germplasm and variety releases, plant introductions; (b) achievements such as invitational papers, technical presentations, and other reports, accomplishments or indicators of progress not otherwise documented; and (c) if there are no achievements, so state.

Note: ADODR's and PL 480 sponsoring scientists should include progress reports for extramural and PL 480 projects.

*Show MODE Code Levels L4 to L6 or L7 whichever is appropriate for this Research Unit (preferably at the Research Leader level).

(Instructions & Format) CY 1979
Annual Research Progress Report (FY 1978)

5500-10-20-05-10
(MODE Code)

B. Attach CRIS Work Unit Progress Report(s) (Form AD 421).

Preprinted Forms AD 421 will be furnished. These should be completed by the scientist and signed by the RL. Facsimile copies of the AD 421 should be attached to the report and provide a specific report for each approved CRIS work unit.

~~If you choose to use the preprinted AD 421 for the final report, be sure to follow the established procedures in terminating work units. Also, do not make changes on the preprinted entries on the form AD 421. Submit amendments through regular channels on Form AD 416. (See XXXX below)~~

C. Principal Accomplishments and Significance.

In those cases where a significant accomplishment has been realized for this NRP in the Research Unit during the past year, prepare a short paragraph (about 10 lines) stating what was accomplished, how it was accomplished and why it was significant. These should be complete statements addressed to the nontechnical reader and can include research from more than one year when a multi-year project has been completed during the past year. (See XX below)

Examples of these statements follow:

Improved Equipment Reduces Cost of Insect Rearing

Equipment was developed and assembled for a continuous in-line system that forms rearing trays, fills trays with insect diet, implants insect eggs, covers trays and trims trays. This equipment can produce 300 filled and sealed trays per hour and reduces the cost of rearing containers by 75 percent. This improvement is very important to control programs requiring mass rearing of insects.

Nectariless Cottons Reduce Losses from Pink Bollworms in Arizona and California

Breeding stocks developed provide the germplasm that resulted in the recent commercial release of a variety lacking normal plant nectaries. The decreased boll damage and reduced need for insecticide increased growers' profits \$30 per acre.

(XXXX) Do not use the preprinted AD-421 for the final report. Do change incorrect information on the preprinted AD-421 only if the CRIS has been previously corrected through appropriate amendment or revision action.

(XX) Suggestions for slides and for "feelies" for the FY 82 Budget Presentation should be included. For details, please refer to attached copy of letter from Mr. Edminster requesting visuals for the FY 81 Budget Presentation. Similar type information called for in this letter is needed for the FY 82 Budget Presentation.

III. Program Reviews:

List all program reviews that have involved the NRP at this location during the progress reporting period, and identify the recommendations implemented or planned to be implemented as a result.

IV. Submission:

Annual Research Progress Reports will be submitted ~~directly from the Research Leader of the Research Unit to NPS, Area and Regional Offices, and the Project Coordination Office.~~ Submissions will be due ~~April 1~~ each year. together with the Associated Annual Research Plan by the Research Leader through the Laboratory Chief/Director (as needed), through the Area/Center Director to the Regional Administrator so that the Report and Plan can be delivered to Headquarters by March 1, 1980, or as soon as possible thereafter. Due to the lateness of the request from Headquarters for the Annual Research Reports and Plans, we are being allowed considerable leeway in meeting this due date.

1981
ANNUAL RESEARCH PLANS (FY ~~1980~~)

General Guidelines

The Annual Research Plan is the consolidated report of both research and resources plans for the coming fiscal year. It basically includes the planning section of the former Annual WRU Report and Plan, and the Position/Resource Management reports. These plans are the principal source of operating information on the fiscal year for line managers and staff scientists. They are used constantly throughout the year in many decisions and recommendations. Scientists and research administrators who participate in the preparation of these reports should make them as complete and accurate as possible.

Your special attention is called to the following points.

- will usually be the
- Reporting Unit - The unit for planning purposes ~~is the Research Unit.~~ This is usually the area of research headed up by a Research Leader and is the level identified in the MODE Code as L6 or L7. However, if a larger unit forms the basis of management, this unit should be used instead of the Research Unit.
- Reporting Period - The reporting period for the Annual Research Plans is the fiscal year. The coming Plans would be for FY ~~1980~~. 1981
- Front Sheet on Plan - The first page of this report should serve as a general identifier of the Research Unit or cover sheet for the Plans.
- Mission Statement - This is a new item that many units have already developed for other uses. In most instances the Mission Statement will be the same as that used last year.
- Approvals - A section has been added to the front sheet for approval signatures within the line organization.

For the initial submission of the Position/Resource Management documents it is not necessary to show the signatures on the implementation plans because the cover sheet will have them.

- Research Plans - The Plan of Work section is the same as reported in the WRU Report and Plan in past years. (Plans are listed by CWU and under each NRP/TO.

Form 560 and Implementation Plan

These two documents, required under the Position/Resource Management program, are to be submitted as part of this report (see items VIII.A and VIII.B in attached Instructions and Format).

Due Dates: These plans attached to the associated Reports are submitted by the Research Leader through the Area Director to the Regional Administrator so that they can be delivered to Headquarters by March 1, or as soon thereafter as possible. Draft copies of both the Report and Plan are to be sent directly to the NPS coordinator or coordinators by the Research Leader. These copies for NPS should be plainly marked "DRAFT".

3
Two copies of the final approved plans should be submitted to Headquarters by ~~October 1, 1979~~. March 1, 1980.

Note:

Revised Position/Resource Management documents need not be submitted to national headquarters during the year.

1981
ANNUAL RESEARCH PLANS (FY 1980)

I. Research Unit: Show title and address of this Unit (use MODE title)

Research Unit: *Insect Pathology and Rearing Unit*

*USDA, SEA-AR
Western Cotton Research Lab
4135 E. Broadway Road
Phoenix, AZ 85040*

II. Program Mission Statement:

In 20 lines or less give a brief program mission statement for this Research Unit. Refer to existing CRIS work units and to TO's that document the Research Unit program. The mission statement should be broad enough in scope to cover all current research objectives and approaches. Example of Mission Statement follows:

The mission of the Insect Pathology and Rearing Unit of the Western Cotton Research Laboratory is (1) to develop new and innovative methods of cotton insect control by development of microbial insecticide formulations that provide effective control of cotton insect pests, (2) development of new and improved pink bollworm mass rearing techniques, (3) development of methods using remote sensing to study cotton insect migration, and (4) maintenance of insect culture for research by scientists at the laboratory.

III. Research Unit Leader:

Identify by name and discipline title the scientist with primary responsibility for preparing this plan.

IV. Program Identification:

List the NRP(s) and SRP(s) number and/or title included in this Research Unit.

V. Approvals:

Provide for signatures and dates for those approving these plans as follows:

	Signature	Date
Research Unit Leader	_____	_____
Area/Center Director	_____	_____
Regional Administrator	_____	_____

VI. CRIS Work Unit Relationships

Begin this item on a separate page for this Research Unit. List inhouse Work Units contributing to this Unit in the format shown below, including those you anticipate being approved during this fiscal year. Show SY's assigned to each CRIS work unit and appropriate percentages of their time. Below the inhouse show extramural work units that document research in grants, contracts, cooperative agreements (general and specific), and PL-480 projects. On extramural projects identify in parenthesis, the name of the ADODR or sponsoring scientist and the name of the performing organization, as shown below. Indicate by footnote those projects to be revised, terminated, initiated, and those identified as contributing to a Regional Research Project on CRIS Form AD 416, or an SRP on CRIS Form AD 417. For CRIS Work Units to be terminated indicate plans for use of resources (funds and SY's upon expiration of project).

CRIS Work Unit (Form AD 416)				Percent of CWU's to TO (FY 19xx) <u>2/</u>	
Work Unit No. (Field 5)	SY	Title (Field 7)	Termination Date (Field 30)	NRP/SRP TO No.	Percent
<u>Inhouse</u> <u>a/, b/</u>					
5510-20300-001		Pink bollworms control equipment	09 Apr XX	No. 1	50
Smith	.1			No. 2	50
Eng. (vacancy)	--			No. 2 <u>c/</u>	50
5510-20230-002		Misc, insects and spider mites of cotton in	09 Nov XX	No. 1	100
Jones	.5	the SW			
Smith	.2				
5510-20230-005		Yellow bollworm control	30 Apr XX	No. 1	100
Smith <u>d/</u>	.7	in the SW			
Jones	.5				
	<u>2.0</u>				
<u>Extramural</u>					
5590-20231-003-A		Production techniques	25 June XX	No. 1	50
(J.J. Wilson, U. AZ)		for Heliothus virus		No. 2	50

1/ Where an SY works in other Research Units identify them by a footnote.

2/ Indicate the TO's and percentage contribution on CRIS to the TO's. TO percentages should add to 100 percent for each CRIS Work Unit except where an SRP is involved. SRP percentage is independent of the NRP percentages and can be up to 100 percent.

a/ To be replaced by 005 with all resources to be assigned to it.

b/ Contributes to Regional Research Project No. S-75.

c/ Contributes to SRP - Minor Use Pesticides.

d/ New project beginning 10 April XX.

VII. Plan of Work:

State by NRP the NRP-Technological Objective(s) (TO's) to which this Research Unit is directed

Immediately below each NRP/TO listed state by CRIS Work Unit the specific objective(s) of this Research Unit for the planning period, i.e., tell how this research is expected to contribute to the TO. Follow each specific objective with a brief description of experimental and operational plans to be used. These plans should be in sufficient detail so they can be judged for technical adequacy by reviewers (see attached format).

Note: Each Specific Objective listed for the Research Unit must be referred to in a subsequent "Research Progress Report".

ADODR's and PL-480 sponsoring scientists should include objectives and plans for extramural and PL-480 projects, if possible.

VIII. Position/Resource Management Data:

A. SEA Form 560 (April 1978)

Prepare this form for the Research Unit in accordance with AM 408-1 and any supplemental instructions from Region or Area.

B. Implementation Plan

Prepare for the Research Unit both the staffing chart and narrative statement in accordance with AM 408-1 and any supplemental instruction from Region or Area.

IX. Submission:

~~The Research Plan and Position/Resource Management data are submitted annually on a fiscal year basis. The planning process should begin before the next fiscal year with research and resource planning coordinated with development of SEA 437 forms. Completed Annual Research Plans will be due at Headquarters during August-September with specific guidelines for timing issued each year.~~

The Annual Research Plans (including the Position/Resource Management Data) will be submitted together with the associated Annual Research Reports by the Research Leader through the Laboratory Chief/Director (as needed), through the Area/Center Director to the Regional Administrator so that the Report and Plan can be delivered to Headquarters by March 1, 1980, or as soon as possible thereafter. Due to the lateness of the request from Headquarters for the Annual Research Reports and Plans, we are being allowed considerable leeway in meeting this due date.

FORMAT

ANNUAL RESEARCH PLANS (FY ¹⁹⁸¹~~1980~~)

I. Planning Unit:

Title (as per MODE Code, see attached listing)
Address

II. Program Mission Statement: (Mission of Research Unit)

III. Research Unit Leader or Person Responsible for Preparing Plan: (Name & Title)

IV. Program Identification: (List NRP(s) and SRP(s))

V. Approvals: (Signature and dates)

VI. CRIS work Unit Relationships (Complete one table for the total Research Unit)

VII. Plan of Work:

NRP (Show NRP number and title)

A. Technological Objective (TO) (State TO)

1. CRIS work unit No. (e.g. 001). State specific objective followed by an experimental and operational plan by CRIS work unit.

2. CRIS work unit No. (e.g. 002). State next specific objective followed by an experimental and operational plan by CRIS work unit.

B. State each appropriate TO with specific objective(s) followed by an experimental/operational plan by CRIS Work Unit.

NRP (Show NRP number and title)

(Show same information for each NRP in the research unit, i.e., specific objective(s) with plans by TO.

VIII. Position/Resource Management Data:

A. SEA Form 560 (Complete this form for the Research Unit)

B. Implementation Plan (Complete both the staffing chart and narrative statement for the Research Unit)

Refer to supplementary instructions given by Region or Area regarding preparation of Annual Research Plans, FY ~~1980~~.

1981

IX. Submission:

Specific date set annually.

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

OFFICE OF THE DEPUTY DIRECTOR FOR
AGRICULTURAL RESEARCH
WASHINGTON, D.C. 20330

17 DEC 1979

SUBJECT: Visuals for FY 81 Budget Presentation

TO: Regional Administrators
Chiefs, NPS

Attached is a copy of the Status of Program report that has been forwarded to OBP&E. This report contains selected examples of research progress that might serve as a basis for developing visuals for budget presentation. The decision has been made to again use slides and other visuals in lieu of the briefing book used by AR in the past. The slide presentation that we used in support of the 1980 budget was very well received and generated a great deal of interest on the part of the Committee. The slides and material that you sent in last year were most helpful. Your close cooperation again this year will be absolutely necessary in order to compile some outstanding slides that "tell the story." Obviously only one or two can be used for any example so they must be of good quality.

Also, would you please consider some "feelies" that we could have on a table as we did last year. These aroused a great deal of interest. If they can be related to some of the slides, it is helpful in the presentation, but they should not be limited to this. Good self-explanatory captions should be with each item because we rarely have the opportunity to personally discuss them.

Please forward your slides and suggestions for "feelies" to Dr. John Naegle in my office by January 8, 1980. This will permit me, the Chiefs and the Information Staff to develop appropriate lead stories.

Thank you for your cooperation.

John A. Naegle
T. W. EDWINSTER
Deputy Director

Enclosure

*I called Naegle's
offices. Extension
14
to Jan. 14, 1980 -
lal*

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*POK
R/M*

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lal*

Summary Enclosure

Research on Animal Production -

Selected examples of recent progress:

Screwworm Adult Suppression System (SHASS)
Development of Imported Fire Ant Control
Brucellosis Vaccination
Improved Methane Generator Can Make Swine Enterprises Energy
Self-Sufficient
Beef Cattle Types Characterized for Production Efficiency
Synchronization of Estrus in Swine
Development of Improved Bluetongue Virus Vaccine for Sheep
Microencapsulation of Insecticides Reduces Frequency of Application
Use of a New Test in Diagnosis of African Swine Fever
Plastic Loop Shows Promise in Preventing Mastitis in Cows
Field Evaluations of Biological Control Agents for Mosquito
Control
Exotic Species of Beetle Aids in the Biological Control of
Pamire-Breeding Insects
Pseudorabies and Parvovirus Vaccine for Swine
Two New Approaches to Increasing Reproductive Efficiency in
Cattle
Inexpensive Method of Blood Sampling Perfected and Field Tested
Selected Lines Show 47 Percent Gain in Weight of Lamb Weaned at
120 days
Feed and Lighting Energy Requirements for Broilers Reduced by
Intermittent Lighting

Research on the Use and Improvement of Soil, Water, and Air -

Selected examples of recent progress:

Can Crop Residues Be Used as a Source of Energy?
Agricultural Nonpoint Source Pollution Model Being Developed
Level-Basin Irrigation Improves Water and Energy-Use Efficiency
Aquatic Ecosystems Useful for Metabolic Research
Saline Seeps on Drylands of the Northern Great Plains Can
be Controlled
Modern Agriculture for Developing Countries
Effect of Environmental Stress on Plant Growth Can Now Be
Predicted
Field Manual for Research in Agricultural Hydrology
A Tailwater Control System Reduces Erosion and Sediment Loss
from Irrigated Land
Detection of Cold Damage to Winter Wheat Seedlings

Research on Plant Production -

Selected examples of recent progress:

Plant Biochemists Make Breakthrough in the Understanding of
Photorespiration - A Wasteful Plant Process
Citrus Blackfly is Now Under Control
Plant Disease May Be Reason for Poor Yields in No-till
Potent Attractant Isolated and Identified for Several Important
Insect Pests
Tifton 44 Bermudagrass Released
Basic Research Provides Basis for Improved Wild Oat Herbicide
Performance
Productive Native Range - Complementary Forage Beef Production
System Developed
Eradication of the Boll Weevil
Basic Photosynthesis Research Explains Why Plants Are Tolerant
to Herbicides
Wild Bee Pollinators for Pome and Nut Crops and Red Clover
Identified
Plant Exploration to Japan--Fall 1978
Dope Wick Applicator Offers Greater Precision, Selectivity, and
Lower Costs in Weed Control
Experimental Chemical Increases Apple Fruit Set
A Disease Organism for Grasshopper Control Developed
Alfalfa Biological Nitrogen Fixation May Save Natural Gas to
Heat Homes
Understanding the Transfer of Genetic Information from Bacteria
to Plants
10 New High Yielding Soybean Varieties with Resistance to
Diseases, Plant Lodging, Stress Environments, or Herbicide
New Method Discovered for Applying Herbicides for Weed Control
in Alfalfa and Field Beans
Dramatic Increase in Use of Plant Germplasm
Reduced tillage enhances the growth of spring-planted crops
and reduces energy requirements and soil erosion
New Pima Cotton Variety Widely Grown in the Southwest
Research on Chemicals Expands Pesticide Uses Available to
Growers
Rear Meadow Bromegrass Markedly Increased Irrigated Pasture
Yields
New Strains of a Biocontrol Fungus to Improve Control of
"Belly Rot", a disease of cucumbers
New Citrus Hybrid Introduced
Biological Control with an Insect Virus
Corn Rootworm Parasite Successfully Reared in the Laboratory

Cost of Gypsy Moth Virus Reduced to Less than Cost of
Conventional Insecticides
Diagnosis of Virus Disease Carrying Nitos made Possible on
Basis of Plant Galls

Processing Storage Distribution, Food and Consumer Service Research -

Selected examples of recent progress:

Development of a Rapid, Qualitative Scheme for Detecting Sulfa
Drugs in Animal Feed
U.S. May Exports to Japan Resumed
No-twist Process Reduces Cost of Making Natural Fiber Yarns
Quality of Processing Potatoes Will Improve
New Method of Protecting Stored Farmer's Stock Peanuts
Against Insects
Inhibition of Fungal Growth While Drying Corn During Storage
Nonchemical Control of Stored-Grain Insects
Test Tube System Developed for Studying the Mechanism of
Ripening
Technique for Use in Identifying Undeclared Meat in Cooked
Sausage
Broiler Handling Equipment Reduces Bird Losses and Injuries
Controlled Release Pesticides
Making Potatoes Processable
Alternative Treatment of Chlorination
Sequential Heat Peeling of Tomatoes Improves Productivity
Increased Natural Rubber Yield in Guayule

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
SOUTHERN REGION

Pest Control Equipment and Methods Research Unit
Room 231 Agricultural Engineering Building
Texas A&M University
College Station, TX 77843

RECEIVED MAR 6 1980

March 3, 1980

Subject: Manuscripts and Presentations - 1979

To: Dr. J. R. Coppedge, Research Leader
P.O. Box 986 Moore AFB
Mission, TX 78572

Manuscript accepted: "System for distributing a pelletized formulation of a bait and toxicant system from aircraft to combat the screwworm fly" MS # AE79-120. J. L. Goodenough, J. R. Coppedge, H. E. Brown, J. W. Snow, and F. H. Tannahill. MS # AE79-120, accepted for publication in TRANSACTIONS of the ASAE.

Manuscripts Published:

"Adult Screwworms: Comparison of Captures in Wind Oriented and Electrocutor Grid Traps" John L. Goodenough. J. Econ. Entomol. 72:419-422. 1979.

"Capture of Screwworm and Secondary Screwworm Flies (Diptera: Calliphoridae) in a Time-Interval Grid Trap and Correlation with Temperature and Humidity" J. L. Goodenough and J. W. Snow. J. Med. Entomol. 16:95-103. 1979.

"Recovery of Screwworm Flies Released at Various Distances and Directions of the Attractant Swormlure-2" A. B. Broce, J. L. Goodenough, and J. W. Snow. Environ. Entomol. 8:824-828. 1979.

1979 Presentations:

1979 Summer Meeting, American Society of Agricultural Engineers, University of Manitoba, Winnipeg, Manitoba, Canada. June 24-27, 1979.

1. The Screwworm Program: Engineering Involvement in an International Insect Control Program. J. L. Goodenough and J. W. Snow (oral).
2. Screwworm Flies: Is Vision the Key to Big Savings? J. L. Goodenough (oral).
3. A Materials Handling System for SWASS. J. L. Goodenough, H. E. Brown, J. R. Coppedge and J. W. Snow (oral).

This is all I find now. The other paper on distributing SWASS (Alpine) was sent to the ASAE TRANSACTIONS 11/26/79, but I doubt that it can be counted yet. (I've not received any word yet, even on reviews.)

I'LL send you the list of proposed screwworm manuscripts when I get back to College Station which should be March 16-17.

Best regards,

John

J. L. Goodenough, AE

Dr. Coppedge

S.C. Rawlins

Research Accomplishments for the past year.

Developed populations of screwworm flies showing 10 to 20 fold levels of tolerance to coumaphos or DDT in the egg - larval stages. This is part of the program to develop a genetic sexing system of the screwworm fly. This work is continuing.

Laboratory studies were completed on the antifertility qualities of certain benzyl phenols and benzyll, 3-benzodioxole on the screwworm fly. Attempts at field evaluation of these chemicals against C. macellaria were not finalised.

Minor studies of growth regulatory compounds affecting the screwworm fly were completed.

Planned research for the coming year.

To finalise the selection of insecticide -DDT and coumaphos - resistant populations of the screwworm fly. This will be a key to developing a genetic sexing system.

To finalise the selection of heat resistant populations.

To characterise these resistant strains.

To perform a field evaluation of a screwworm adult suppression system (SWASS) involving a benzyl phenol chemosterilant.

Technical presentations.

At the annual regional meeting of the ESA held in Brownsville, Feb 10 - 12 1960, a paper entitled "The influence of age and sex on the sensitivity to insecticidal stresses on normal and irradiated screwworm flies" was presented.

1. The first part of the report is a summary of the work done during the year.

The second part of the report is a detailed account of the work done during the year. It is divided into three main sections: the first section deals with the work done in the field, the second section deals with the work done in the laboratory, and the third section deals with the work done in the office.

The third part of the report is a summary of the results of the work done during the year. It is divided into three main sections: the first section deals with the results of the field work, the second section deals with the results of the laboratory work, and the third section deals with the results of the office work.

The fourth part of the report is a summary of the conclusions drawn from the work done during the year. It is divided into three main sections: the first section deals with the conclusions drawn from the field work, the second section deals with the conclusions drawn from the laboratory work, and the third section deals with the conclusions drawn from the office work.

The fifth part of the report is a summary of the recommendations made during the year. It is divided into three main sections: the first section deals with the recommendations made from the field work, the second section deals with the recommendations made from the laboratory work, and the third section deals with the recommendations made from the office work.

The sixth part of the report is a summary of the work done during the year. It is divided into three main sections: the first section deals with the work done in the field, the second section deals with the work done in the laboratory, and the third section deals with the work done in the office.

The seventh part of the report is a summary of the results of the work done during the year. It is divided into three main sections: the first section deals with the results of the field work, the second section deals with the results of the laboratory work, and the third section deals with the results of the office work.

The eighth part of the report is a summary of the conclusions drawn from the work done during the year. It is divided into three main sections: the first section deals with the conclusions drawn from the field work, the second section deals with the conclusions drawn from the laboratory work, and the third section deals with the conclusions drawn from the office work.

The ninth part of the report is a summary of the recommendations made during the year. It is divided into three main sections: the first section deals with the recommendations made from the field work, the second section deals with the recommendations made from the laboratory work, and the third section deals with the recommendations made from the office work.

The tenth part of the report is a summary of the work done during the year. It is divided into three main sections: the first section deals with the work done in the field, the second section deals with the work done in the laboratory, and the third section deals with the work done in the office.

The eleventh part of the report is a summary of the results of the work done during the year. It is divided into three main sections: the first section deals with the results of the field work, the second section deals with the results of the laboratory work, and the third section deals with the results of the office work.

A. Manuscript published.

S.C.Rawlins, L. Jurd, and J.W.Snow.

Antifertility effects of benzylphenols and benzyl -1,3-Benzodioxoles on screwworm flies.

J. Econ. Entomol. 72 (5) 674-77.

B. Manuscript at the National Technical Editor:

S.C.Rawlins, D.O.McInnis and J. Ellison.

An evaluation of techniques for distinguishing normal and irradiated Male screwworm flies.

For J. Med. Entomol.

S.C.Rawlins and L. Jurd.

Influence of the mode of administration of benzylphenols and benzyl 1,3-benzodioxoles on screwworm fertility.

For J. Econ. Entomol.

C. Going to peer review:

S.C.Rawlins.

Influence of new growth regulatory compounds on adult and immature stages of the screwworm fly.

For J. Med. Entomol.

S.C.Rawlins.

The effects of age and sex on the sensitivity to insecticidal stresses on normal and irradiated screwworm flies.

For J. Econ. Entomol.

Research Accomplishments CY 1979

- A. Insect reference collection - An insect reference collection has been established at SRL, Mission. The bulk of the collection is representative of those insects attracted to SWASS pellets. Collection, identification, and preparation of the specimens was a cooperative effort between SRL staff and the IIBIII, Beltsville.

Planned Research Activities CY 1980

- A. Improvements on the present trapping system to evaluate and survey field populations of screwworms.
- Limitations in the wind oriented trap (WOT) in recent Sinaloa studies has prompted an investigation of an improved trapping system. Wind oriented traps baited with swormlure and new trap designs will be evaluated in different climatic and environmental situations in Mexico. Investigations will include WOT height above ground and direction of entrance into the trap cone. New trap developments will attempt to increase the proportion of male screwworms sampled.
- B. Selection of trapping sites
- Evaluation of trap sites will be made to determine the environmental factors which may make certain sites more attractive to screwworms. Analysis of the biotic community and microclimatic variables will facilitate selection of trap site locations. Included will be an investigation of the

feasibility of using aerial infrared photography in selecting sites.

C. Applications of the Standard Agility Test chamber in laboratory studies of screwworm behavior.

The SAT chamber will be used to evaluate the effect of extended periods of chill on adult screwworms and of radiation dosages on adult emergence and agility. The feasibility of using the chamber to measure adult response to transmitted light colors and wavelength will be determined.

Screwworm (Diptera: Calliphoridae) myiasis on Curacao: Reinvasion after 20 years. F. H. Tannahill, J. R. Coppedge, and J. W. Snow. Will be published in 17 (3) issue of the J. Med. Entomol. scheduled for May 1980.

An intensive survey for screwworms (Diptera: Calliphoridae) in the United States during 1979. F. H. Tannahill, L. E. Wendel, J. W. Snow, J. R. Coppedge, W. A. Belcher, and R. J. Schwartz. 2nd draft. Special APHIS series.

Exhaust fume anesthetizer for use with wind oriented screwworm traps. F. H. Tannahill and J. W. Snow. Rough draft. South-western Entomologist.

Don McInnis

1. Planned research projects during calendar year 1980:

- A) Major emphasis will continue to be placed upon describing chromosome patterns of wild populations of screwworm, especially those in Mexico. Analysis of samples will be used to (1) measure the extent of chromosomal variation in screwworm populations and (2) assess the degree, if any, to which reproductively isolated populations of screwworm exist in sampled areas.
- B) Work will continue on the study of mating choice behavior of laboratory strains of screwworm. To date, a standard technique has been developed for marking and observing tested adult flies in cages. Strains can and will routinely be tested for possible assortative mating patterns.
- C) As the need arises, high priority will be placed upon factors in the development of factory reared screwworm strains which are under the supervision of Mission research workers.
- D) Time permitting, basic research will be undertaken in the following potentially important areas:
 - 1) Morphology of irradiated and unirradiated sperm with the goal of reliably distinguishing the two in order to allow a determination of mating partner's for field caught mated females.
 - 2) External morphological features in particular

- 3) Heritability measures for various traits, such as larval size or adult mating vigor.
- 4) Polytene chromosome tissues in hopes of locating a tissue in which these giant chromosomes - potentially extremely valuable in identification of distinct types - are resolvable and useful.

2. Research accomplishments for the past year:

- A) Development of chromosome techniques suitable for analysing wild screwworm populations. With the basic approach employed by Dr. John Ellison (Univ. of Texas), we can study brain metaphase preparations using ultra-violet light microscopy. This basic technique enabled us to measure chromosomal variation found in laboratory strains which originated from regions of northern Mexico and southwestern U. S. Also, an intensive survey was made of a local wild population from Aldama (Tamaulipas), Mexico. Beginning in the late fall, another region of intensive sampling associated with a field test of two mass-reared strains (DE-9, and ARICRUZ) was sampled in Sinaloa, Mexico. To date, chromosomal variants have been found for 5 of the 6 pairs characteristic of the species, Cochliomyia hominivorax. These range from a total of 5 variants for the X chromosome, 5 distinct Y chromosome types to 2 variants each for the non-sex chromosomes designated numbers 2, 3, 4, and 6.
- B) Development of a protocol and standard procedure for testing mating choice patterns of adult screwworms.

To date we have tested roughly 40 different strains of fly by observing distinctly marked adults of between two to five strains present simultaneously in a laboratory cage. Records are kept for copulatory attempts (including presumptively successful ones) as well as actual mating results following spermathecal dissection.

- C) Preliminary examination of normal (unirradiated) versus irradiated sperm in testes and in the spermathecal of mated females. Thus far, no solution is at hand which allows one to morphologically or physiologically distinguish these two classes of sperm. It is hoped that new work with vital staining of internal parts of mature sperm will provide the suitable medium for accurately sorting sperm in spermathecal.
- D) Development of a relatively simple technique for distinguishing normal from irradiated male adults by examination of spermatid morphology in aceto-orceirn stained testes. This technique was found to be adaptable to field conditions in contrast to other methods of distinguishing wild from sterile released flies.

3. Publications during the past year:

- A) As senior author: (no publications)

Research completed and paper being prepared regarding chromosomal variation in a local screwworm population from Aldama, Mexico.

- B) As junior author: (no publications)

Paper on an evaluation of methods for distinguishing

normal from irradiated male adults (submitted to the N.T. editor).

4. Technical presentations during the past year (CY 1979):

- A) Progress report on chromosome analysis and techniques made at the quarterly technical meeting (July 1979).
- B) Progress report on mating choice experiments made at the quarterly technical meeting (December 1979).

Research.

1. To assess the dietary contribution of bovine dung to longevity, egg development, and oviposition in adult screwworm flies.

Flies provided with bovine dung and a source of carbohydrate (honey) showed greater survival than flies provided with honey alone or honey and water. Dung failed to provide sufficient protein for egg development and oviposition. Dung probably contributes to survival by providing water and other nutrients. Dung could be a critical factor for survival in arid environments or during periods of drought.

2. To analyse cuticular hydrocarbons (with George Pomonis, Fargo)

Work is continuing in determining the hydrocarbon profiles of adult male and female flies from the following sources: (1) strains under mass-colonization, (2) geographically different areas, (3) flies reared under different environmental conditions (eg, irradiation, diet, ambient outdoor situations, etc), (4) strains sexually-incompatible under laboratory conditions, and (5) strains genetically different based on karyotype analysis. Differences between the sexes has suggested the identity of a sex-recognition pheromone. Monitoring changes during mass-colonization has shown possibilities as a quality control technique. Hydrocarbon analyses serve to complement genetic and morphological data now being employed to distinguish among screwworm "types".

3. To determine the influence of altitude and climate on screw-worm populations in the state of Chiapas, Mexico (part of the future barrier zone).

A series of wind-oriented (WO) traps have been established over a range 440 to 2300 meters above sea level to monitor fly activity. In the same area, 4 weather stations and 9 rain gauges have been placed to monitor temperature, humidity, and rainfall. Additional adult and larval material will be gathered for genetic, morphological, and hydrocarbon analysis. Questionnaires will be passed out among ranchers and farmers in the survey area to gain some understanding of the economic impact of screwworms. All these data will compliment similar surveys conducted in the Pacific coastal area of Chiapas (0-100 meters above sea level). Work is being conducted in cooperation with APHIS-Tuxtla & will last 1-2 years.

Nonresearch.

1. Language school, Cuernavaca, Mexico. January 1979 (4 weeks).
2. Re-located at SEA laboratory, Tuxtla.
3. Participated in administering and expanding the SEA laboratory, Tuxtla.

Publications(?): The Screwworm Program: Current Problems and Research. In-Proceedings of FAO/IAEA Training Course on Use of Radioisotopes and Radiation in Entomology. July-August 1979. University of Florida/USDA, Gainesville, Florida. (Article is based on a lecture I gave at the training course).

Research 1980.

1. To continue studies outlined under #2 and 3 under Research 1979.
2. To determine under controlled conditions the nature of fly response (i.e., sex, physiology, etc.) to manure and flower volatiles. This information should in part establish a basis for understanding and improving screwworm attractants.
3. To develop techniques for detecting and observing wild screwworms in Mexico.
4. To determine: (1) the loss rate profiles of the swormlure-2 components under ambient conditions, (2) the influence of temperature, humidity, and rainfall on loss rates, and (3) the attractiveness of variously aged swormlure-2 for screwworms, macellaria, and other Diptera in order to complement the chemical data above. (With HEB, Mission).
5. To assist in conducting a survey to determine the economic impact of screwworm in the future barrier zone.
6. To assist in conducting the SEA-UT field study of genetically different screwworm types in the Pacific coastal area of Chiapas.

Nonresearch.

1. To continue work outlined under #3, nonresearch 1979.

Publications.

1. Evidence for a female sex-recognition pheromone in the screwworm fly. Mackley and Broce. Status: back from NTE. Ann. Entomol. Soc. Am.
2. Screwworm cuticular hydrocarbons (?). Pomonis and Mackley. Status: being drafted.
3. Bovine dung as a possible food source and an aid to host-finding for adult screwworm flies, Cochliomyia hominivorax Coquerel. Mackley and Snow. To be presented at the South-western ESA branch meetings, Brownsville, Tx. Feb. 13, 1980. Status: being drafted. March 1980.
4. Studies on the relationship of adult screwworms and flowering vegetation in south Texas. Mackley and Long. To be presented at the annual meeting of the Sociedad Mexicana de Entomologia, San Luis Potosí, April 14, 1980. Status: being drafted. April 1980.

Harold Tannahill

To evaluate the effectiveness of Bait stations for suppressing native screwworms in Mexico.

A large scale field evaluation in southern Mexico to assess the effectiveness of Bait stations in an area where there is a native screwworm population.

Population suppression will be measured with sentinel sheep pens and swormlure-2 baited WO traps.

An intensive trapping survey for screwworms in eight Texas counties during 1979.

An intensive trapping survey using swormlure-2 baited WO traps was done in Presidio, Brewster, Terrell, Val Verde, Maverick, Webb, Starr, and Zapata counties during 1979. Twenty traps were deployed in each county (average 1 trap/45 mi²). No native female screwworm flies were captured in the test counties due to the low incidence of screwworm cases in Texas, however, WO traps were shown to be an effective tool to monitor sterile fly activity in the field. As screwworm eradication is moved south into Mexico traps will be beneficial in monitoring screwworms in areas that have been eradicated to prevent reinfestation.

Development of an exhaust fume anesthetizer for use with wind oriented traps.

Objectives:

A new method of anesthetizing screwworm flies captured in wind oriented traps was developed which utilizes exhaust

fumes from a vehicle. Tests using this procedure showed that the mean times for anesthetization at wind velocities of 30.5, 91.4 and 152.4 m/min was 14.2, 22.1 and 46.3 sec respectively. This system is rapid and the condition of the flies is such that they can be easily identified and the female screwworms dissected after anesthetization.

To determine the feasibility of a testes squash technique and stain for identification of sterile and native male screwworms in the field.

Objectives:

A squashed testes method to distinguish between fertile and sterile male screwworms was developed using 45% acetic acid as a fixative and then staining with aceto orcein to identify irradiated and nonirradiated spermatids. This method requires less than 5 min. and can be done by trained technicians in the laboratory. Tests will be conducted to determine the time requirements and the confidence limits of this technique for field use.

Development of a modern computerized data retrieval system.

Objective:

Two programs are being used to store, sort and analyze data. The first program, Milten Wylbur, is used to enter raw data. The second program, Statistical Analysis System (SAS), is used for data retrieval, manipulation and

transformation, maintenance, report writing, and statistical analysis. The computer has been used to analyze trap data, some weather information, and confirmed screwworm cases in the United States for 1979. The computer terminal has also been used to exchange information and data concerning screwworm genetics research with the University of Texas at Austin. Future plans are to expand this system to store and analyze different types of data for the entire screwworm eradication program.

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I. Research Unit:

Screwworm Research
USDA, SEA, AR
P. O. Box 986
Mission, Texas 78572

II. Research Progress:

A. Technological Objective (TO. 1)--New and improved methods to reduce losses caused by insects, ticks, and mites.

1. Progress Report (Narrative):

- a. To determine the nature of flower volatiles from given species of vegetation as they affect aggregation of adult screwworms.001.

No progress.

- b. To continue the work with SWASS and transfer the technology to APHIS.001.

Systems for the mass production and storage of SWASS were developed. Pellets produced by a California Pellet Mill extruder were as effective as tablet type pellets field tested previously in Jeff Davis County, Texas. The CPM pellets have a half-life of approximately 2 days in the field and 7 days when stored (in sealed containers) at room temperature. Pellets can be stored at 3-4°C for extended periods without significant loss of swormlure and minimal (20% in 6 weeks) loss of dichlorvos. SWASS pellet production, storage and distribution is now part of the APHIS program operation. During 1979 approximately 50,000 pounds of SWASS pellets were used in the screwworm eradication program. SWASS has been given considerable credit for the success of the screwworm eradication program during the past year.

- c. To develop a system to kill screwworm females so that males only will be mass-reared.001.

Populations of screwworms showing 10-20 fold levels of tolerance to Coumaphos and DDT in the egg and larval stages were developed. Research is continuing to develop higher levels of resistance before attempts are made to couple the resistant gene to the male determining chromosome.

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- d. Isoenzyme evaluations to determine genetic changes in screwworm populations.001.

These evaluations are being conducted on the strains of screwworms now in mass production and when these studies are completed they should provide valuable new techniques for monitoring strain deterioration in mass-culture.

- e. Continue studies of the ecology of the screwworm.001.

In the Pacific coastal area of Chiapas, Mexico, the primary screwworm population reached seasonal highs in July and November-December and a seasonal low in April. The secondary screwworm, had a similar trend peaking in July and November with a seasonal low in March. Collection of egg masses from sheep showed a 98%+ viability rate. Seasonal fluctuation of both species appeared to be related to available soil moisture.

- f. The rate of breakdown of various candidate insecticides will be determined for use with SWASS.001.

In laboratory tests dursban and trichloroform both appeared promising for use in SWASS. Neither of these compounds give as rapid a knock-down of responding screwworm flies as dichlorvos. Large scale field tests are needed to determine their full potential for use in SWASS pellets.

- g. To enlarge the research laboratory facilities in Mexico. 001.

Four mobile homes were obtained as surplus from APHIS; these trailers have been added as laboratory and storage space at Tuxtla Gutierrez.

- h. To determine the existance of a sex recognition pheromone in adult screwworms.001.

Adult females of the screwworm fly were found to produce a chemical that males could detect on contact. This chemical functions as a sex identifier and a copulatory stimulant for males; it may also affect other aspects of the mating ritual. The chemical(s) is probably part of the nonpolar cuticular lipids.

- i. To develop more economical liquid nutrient medium for mass rearing screwworm larvae.004.

No progress.

- j. Continue to improve the attractiveness of swormlure and to thoroughly test the solid formulation.004.

Several new formulations of swormlure were tested during the past year but none proved more attractive than swormlure-2. Attempts to remove some of the more caustic chemicals from the swormlure-2 mixture without significantly reducing attractiveness were unsuccessful. In field test solid formulations of swormlure-2 were about 25% less effective than the liquid formulation but remained attractive in the field 3-4 times longer following a single baiting.

- k. To determine if physical attractants (primarily vision) can be used to improve present tools or to develop new tools for detection and survey of screwworm flies and to improve the efficiency of SWASS.005.

No progress.

- l. Research will be conducted to determine the dietary requirements of adult screwworms by studying the components of flower nectars upon which they feed. 008A.

Extracts of several types of flowers have been prepared and condensed; however, they have not yet been chemically analyzed. In related studies flies provided with bovine dung and a source of carbohydrates showed greater survival than flies provided with honey alone or honey and water. Dung failed to provide sufficient protein for egg development and oviposition.

- m. To characterize the chromosomes in screwworm populations from Mexico and Central America.008A.

Techniques were developed so that brain metaphase preparations could be studied using ultra-violet light microscopy. Using these techniques an intensive survey was made of wild screwworm populations from Aldama (Tamaulipas) Mexico and from Sinaloa, Mexico. To date, chromosomal variants have been found for 5 of the 6 pairs characteristic of the screwworm. These range from a total of 5 variants for the X chromosome, 5 distinct Y chromosome types to 2 variants each for the non-sex chromosomes designated 2,3,4 and 6.

- n. No objective was listed for this accomplishment.001.

A strain of screwworm flies was developed from insects collected in northeastern Mexico. The strain (DE-9) was introduced into mass production during Oct. 1979. Insects produced from this strain established a new record size for mass reared larvae.

- o. No objective was listed for this accomplishment.001.

A strain (DE-9) of screwworm flies that were developed from a population on the east coast of Mexico were evaluated for their effectiveness in mating with native females of west coast populations. After 3.5 weeks of released sterile DE-9 males into a test area in the state of Sinaloa the sterility of egg masses collected from a variety of natural host increased from 2% to 75%. The results indicated that sterile males derived from one geographic region were competitive in mating with native females in a different geographic region.

- p. No objective was listed for this accomplishment.001.

Three populations (attractant-derived, cattle-derived, and sheep-derived) of screwworms from the municipio of Aldama, Tamaulipas Mexico, were assessed electrophoretically (at 8 loci) to investigate the possibility of non-random (assortive) mating occurring among the population. The analysis indicated no significant differences between the cattle and sheep derived population, but a morph. of octanol dehydrogenase (ODH) found among the attractant-derived population was absent in the other populations. These results suggest the possibility of presence of preferential host selection in the area.

- q. No objective was listed for this accomplishment.001.

A relatively simple technique was developed for distinguishing normal from irradiated male adults by examination of spermatids following staining with aceto-orceirn stains. This technique appears readily adaptable to field conditions.

- r. No objective was listed for this accomplishment.001.

Laboratory studies were completed on the antifertility effects of certain benzyl phenols and benzyl 1-3 ben-zodioxole on the screwworm fly. Some of these compounds proved highly effective in inducing sterility in the female screwworm fly following oral application. Field

evaluations of these compounds have not been finalized.

- s. No objective was listed for this accomplishment.001.

An intensive trapping survey using swormlure-2 baited wind oriented traps was conducted in several south Texas counties. No native female screwworm flies were captured in the test counties due to the low incidence of this pest in Texas; however, the results of this survey proved quite useful in monitoring sterile fly activity in the field. Progress was made in computerizing results from trapping surveys.

- t. No objective was listed for this accomplishment.001.

A new method of anesthetizing screwworm flies captured in wind oriented traps was developed which utilizes exhaust fumes from a vehicle. This system is rapid and the condition of the flies is such that they can be easily identified and the female screwworms dissected after anesthetization.

- u. No objective was listed for this accomplishment.001.

A study was conducted to investigate a recurring screwworm problem in the municipality of Aldama in Tamaulipas, Mexico. The results of these investigations indicated that poor released fly quality and inadequate producer cooperation were the reasons the sterile male release program in the Aldama area was ineffective. When these problems were corrected the screwworm problem in Aldama was alleviated. This removed a serious obstacle in the current efforts to eradicate the screwworm from the U.S. and northern Mexico.

- v. No objective was listed for this accomplishment.001.

A new technique (bait-station) was developed for suppressing screwworm populations. Recently a need has been shown for a long lasting formulation of SWASS that can be distributed from the ground. In response to these needs bait stations were developed by utilizing a feeding bait-toxicant mixture and a slow release formulation of swormlure-2. When evaluated under field conditions bait stations were at least as effective as wind oriented traps in killing or capturing screwworm flies, they are effective 6-8 weeks and were produced relatively inexpensively. Bait stations appear quite promising for operational use in the screwworm eradication program.

2. Progress Reports (achievements)

a. Publications:

Broce, A. B., R. B. Davey and J. W. Snow. Plastic Wicks as Dispensers of the Screwworm Attractant, Swormlure-2. 1979. J. Econ. Entomol. 72: 115-8.

Broce, A. B., J. L. Goodenough and J. W. Snow. Recovery of Screwworm Flies Released at Various Distances and Directions of the Attractant Swormlure-2. 1979. Environ. Entomol. 8: 824-28.

Brown, H. E., and J. W. Snow. Screwworms (Diptera; Calliphoridae) A New Liquid Medium for Rearing Screwworm larvae. 1979. J. Med. Entomol. 16: 29-32.

Coppedge, J. R., J. P. Spencer, H. E. Brown, C. J. Whitten, J. W. Snow and J. E. Wright. A New Dye Marking Technique for the Screwworm. 1979. J. Econ. Entomol. 72: 40-42.

Goodenough, J. L. and J. W. Snow. Capture of Screwworm and Secondary Screwworm Flies (Diptera: Calliphoridae) in a Time-Interval Grid Trap and Correlation with Temperature and Humidity. 1979. J. Med. Entomol. 16: 95-103.

Goodenough, J. L., J. R. Coppedge, A. B. Broce, H. D. Peterson and A. L. Higgins. Screwworm Flies, A System for Baiting and Distributing the Screwworm Adult Suppression System. (accepted, April 1979) Trans. ASAE.

Rawlins, S. C., L. Jurd and J. W. Snow. Antifertility effects of Benzylphenols and Benzyl-1,3 Benzodioxoles on Screwworm Flies. J. Econ. Entomol. 72: 674-77.

Tannahill, F. H., J. R. Coppedge and J. W. Snow. Screwworm (Diptera: Calliphoridae) Myiasis on Curacao; Reinvasion After 20 Years (accepted for publication September 1979). J. Med. Entomol.

Whitten, C. J. Use of the Isoenzyme Technique to Assess the Quality of Mass Released Sterile Screwworm Flies. Ann. Entomol. Soc. of America. 73: 7-10.

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b. Invitational and Technical Presentations:

Presented paper entitled "The Screwworm Problem ; Current Problems and Research" at the FAO/IAEA training. Gainesville, Fla. 1979.

Invited to address Govenors Committee on Environmental Hazards. October 1979. J. W. Snow and J. R. Coppedge.

Presented paper on Screwworm situation during 1978. Livestock Workers Conference. 1979. College Station, Texas. J. W. Snow.

B. Attached CRIS Work Unit Progress Report:

7204-20480-001

-004

-005

7002-20480-006A(1)

7007-20480-007A

7204-20480-008A

C. Principal Accomplishments and Significance.

Systems were developed for the mass production, packaging and storage of SWASS pellets. Mass produced SWASS pellets proved equally as effective as those produced on a smaller scale previously. Research results indicated prepared pellets could be stored at 3-4°C for several weeks without a significant loss in effectiveness. SWASS production storage and distribution is now under the supervision of APHIS personnel. Last year, approximately 50,000 lbs. of SWASS pellets were used in the screwworm eradication program to contain what could have been widespread screwworm outbreaks.

A new technique (bait-stations) was developed for suppressing screwworm populations. Recently a need has been shown for a long lasting bait-toxicant system that can be distributed from the ground. In response to these needs bait stations were developed which utilize a feeding bait-toxicant mixture and a slow release formulation of swormlure-2. When evaluated under field conditions bait stations were at least as effective as wind-oriented traps in killing or capturing screwworm flies. They were effective 6-8 weeks and were relatively inexpensive to produce. Bait stations appear quite promising for operational use in the screwworm eradication program.

III. Program Reviews

None

WRU (Whitten)

Planned Research Projects

1. To determine the inheritance of the polymorphic enzyme systems; α -glycerophosphate dehydrogenase, phosphoglucomutase, α -esterase, β -esterase, and octanol dehydrogenase, in screwworms. These enzyme systems are currently being used to assess the quality of sterile release flies and to monitor for genetic changes occurring during mass production. Electrophoretic data from siblings will be used to establish inheritance and linkage patterns, thereby increasing the sensitivity of isozymic characterizations of screwworm populations.

(2)

2. To determine the enzyme kinetics of the isomorphs of the α -glycerophosphate dehydrogenase (α -GDH) system. Evidence is accumulating that the ambient temperature has a selective role in the flight ability of screwworm flies with regard to α -GDH genotype. A study of the kinetics of the three enzyme forms will provide the enzyme activity-temperature relationship in vitro and will allow for more valid in vivo interpretations.

3. To continue to characterize geographic populations of screwworms using the isozyme technique. As insects become available, samples will be analyzed with the standard methods used to date.

(3)

~~18-gm bottle~~

Research Accomplishments (Whitten)

1. No objective was listed for this accomplishment.

A strain of screwworm flies was developed from insects collected in northeastern Mexico. The strain (DE-9) was introduced into mass production during Oct. 1979. Insects produced from this strain established a new record size for mass-reared larvae.

2. No objective was listed for this accomplishment.
Males from

a strain (DE-9) of screwworm flies that was developed from a population on the east coast of Mexico were evaluated for their effectiveness in mating with native females of west coast populations. Following releases ^{for 3½ weeks} of sterile

(4)
DE-9 males into a test area in the state of Sinaloa

the sterility of egg masses collected from a variety of natural hosts increased from 2% to 75%.

The results indicated that sterile males derived from one geographic region were ^{competitive} ~~successful~~ in mating with native females in a different geographic region.

3. No objective was listed for this accomplishment.

Three populations (attractant-derived, cattle-derived and sheep-derived) of screwworms from the

Municipio of Aldama, Tamaulipas, Mexico, were
at eight loci

assessed electrophoretically, to investigate the

possibility of non-random (assortative) mating

occurring among the populations. The analyses

indicated no significant differences between the cattle and sheep-derived populations, but a morph of octanol dehydrogenase (ODH) found among the attractant-derived population was absent in the other populations. These results suggest the possibility of the presence of preferential host selection in the area.

Publications:

Whitten, C. J. 1980. Use of the isozyme technique to assess the quality of mass-reared sterile screwworm flies. ANN. Entomol. Soc. Amer. 73: 7-10

Papers and Presentations

None

A. Manuscripts published since Jan. 1, 1979

Whitten, C.J. 1980. Use of the isozyme technique to assess the quality of mass-released sterile screwworm flies. ANN. ENTOMOL. SOC. AMER. 73:7-10.

B. Manuscripts in progress

Whitten, C.J., Wilson, D.D., and Brown, H.E. Use of the isozyme technique to monitor genetic changes during mass production of the screwworm. For ANN. ENTOMOL. SOC. AMER. Drafting stage

Whitten, C.J. and Snow, J.W. Genetic variation among screwworm populations of differing geographic origin. For Southwest. Entomol. Drafting stage

C. Proposed manuscripts

Preliminary assessment of the economic impact of screwworm in Guatemala, El Salvador, and Honduras May 1980

An assessment of sampling native screwworm populations May 1980

Seasonal response of screwworm flies to attractants in Mexico June 1980

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
SOUTHERN REGION
SUBTROPICAL TEXAS AREA
P. O. Box 267
Weslaco, TX 78596

RECEIVED FEB 4 1980

January 31, 1980

Subject: AD-421 for Use in Completing the
Annual Research Progress Report
for Calendar Year 1979

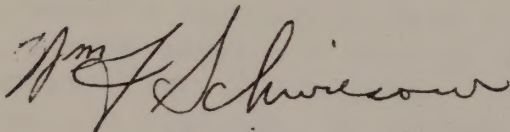
To: Research Leaders, STA

Enclosed are photocopies of subject forms for your use in preparing drafts to be attached to CY 79 Progress Report, and submitted to the Area Office or or before March 1, 1980.

Field 84 "period covered by this report" is to be from the date of the last report or start date of a new project (whichever is appropriate) to December 31, 1979.

As mentioned to you in my memo of January 28, these preprinted AD-421's may not be used for making Final Reports.

All AD-421's must be completed and returned.



Wm. F. Schwiesow
Asst. to Area Director

Enclosures:

- (1) Instructions for entering corrections on CRIS AD-421
- (2) Instructions for completing CRIS AD-421.
- (3) CRIS Forms AD-421, as follows:

7204-20480-001
-20480-004
-20480-005
7002-20480-006A(1)
7007-20480-007A
7204-20480-008A

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

CURRENT AND FUTURE PRIORITIES STAFF
BELTSVILLE, MARYLAND 20705

January 18, 1980

SUBJECT: Instructions for Entering Corrections on CRIS Form AD-421

TO: Principal Investigators

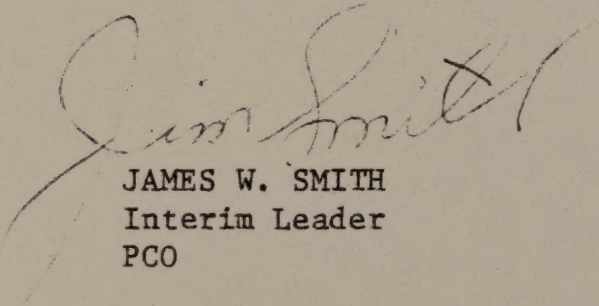
Your continued assistance is a necessary element in maintaining an accurate information file. Thus, we are requesting you to correct errors on the preprinted Form AD-421. All corrections should be entered as follows:

1. Type correct information either above or below the pre-printed entry.
2. With red pencil draw a line through the incorrect preprinted information.
3. Draw a circle in red around the field where the correction appears.

Because of the time lag in getting corrections into the system, some of the changes already submitted may not as yet be reflected on the preprint. Just to be safe, all errors on the form should be corrected. If for some reason a preprinted form is destroyed and you must use a blank form, please enter all data as it appeared on the preprinted form making the corrections as necessary. Please ensure that all corrected fields entered are circled. In addition, the words "Replacement Form" should be entered across the top of the form.

If you fail to get a preprint for a project, use a blank form and enter the words "No Preprint" across the top of the page.

Your continued efforts to improve the information in the file is appreciated.



JAMES W. SMITH
Interim Leader
PCO

R. Peterson

Publications

Peterson, R. D., III, R. J. Gagne, J. W. Snow and J. P. Spencer. Attraction of Non-Target Organisms to SWASS.

Environmental Entomology. Being reviewed among co-authors.

